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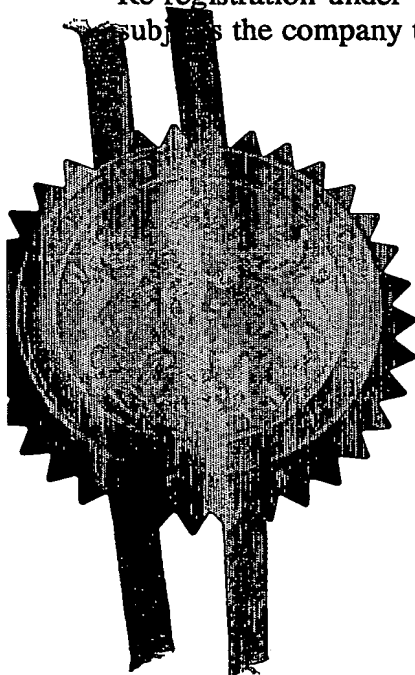
PCT

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Signed

W. Beinen

Dated

9 October 2003



29AUG02 ET 4320-1 003003
P01/7700 000-0220005.3

Request for grant of a patent

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)

THE PATENT OFFICE

29 AUG 2002

The Patent Office

Cardiff Road
Newport
South Wales
NP10 8QQ

1. Your reference

NEWPORT

2. Patent application number

(The Patent Office will fill in this part)

0220005.3

3. Full name, address and postcode of the or of each applicant (underline all surnames)

DAVID NOEL OLIVER
116/120 HIGH STREET,
HAMPTON, MIDDLESEX. TW12 2ST.

Patents ADP number (if you know it)

838461200

If the applicant is a corporate body, give the country/state of its incorporation

4. Title of the invention

DISPLAY DEVICES

5. Name of your agent (if you have one)

ALPHA & OMEGA

"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)

CHINE CROFT, EAST HILL,
OTTERY ST. MARY,
DEVON. EX11 1PJ.

Patents ADP number (if you know it)

4119699004

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number

Country

Priority application number
(if you know it)

Date of filing
(day / month / year)

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing
(day / month / year)

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:

NO.

- a) any applicant named in part 3 is not an inventor, or
 - b) there is an inventor who is not named as an applicant, or
 - c) any named applicant is a corporate body.
- See note (d))

Patents Form 1/77

9. Enter the number of sheets for any of the following items you are filing with this form. Do not count copies of the same document

Continuation sheets of this form

Description

5

Claim(s)

Abstract

Drawing(s)

3

10. If you are also filing any of the following, state how many against each item.

Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (*Patents Form 7/77*)

Request for preliminary examination and search (*Patents Form 9/77*)

Request for substantive examination (*Patents Form 10/77*)

Any other documents
(*please specify*)

11.

I/We request the grant of a patent on the basis of this application.

Signature

Date

28TH AUGUST 2002

12. Name and daytime telephone number of person to contact in the United Kingdom

MICHAEL BROWN 01404 815159

Warning

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Notes

- a) If you need help to fill in this form or you have any questions, please contact the Patent Office on 08459 500505.
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DISPLAY DEVICES

Field of the Invention

This invention relates to display devices of the kind that include an edge-lit light-transmitting sheet having first and second opposed parallel surfaces. Such a display devices is hereinafter referred to as "a display device of the kind specified". It is to be understood that the term "display device" includes an illuminated sign, such as is used for advertising and promotional purposes.

One form of display device of the kind specified is described in European Patent Specification No. 0 549 679, which relates to a display device in which the first and second surfaces each have a matrix of etched, painted or screen-printed dots substantially covering said surfaces.

Another form of display device of the kind specified is described in PCT Specification No. WO 00/58931, which relates to a display device in which at least one of the first and second surfaces has a matrix of spots each having a hollow transparent

interior substantially covering at least a major portion of the surface to be illuminated.

With display devices of the kind specified it is important that the presented surfaces of the device are illuminated substantially equally and, in particular, that the degree of illumination should not fall significantly at positions spaced from the source(s) of illumination.

It is accordingly an object of the present invention to provide an improved method of making a display device of the kind specified.

A further object of the present invention is to provide an improved form of display device of the kind specified.

Summary of the Invention

According to a first aspect of the present invention there is provided a method of making a display device of the kind specified which includes applying a matrix to at least one of the first and second surfaces which comprises a series of lines extending between opposed edges of the sheet and in which the spacings between the lines and/or the thicknesses of the lines are so chosen as to obtain a desired intensity of illumination at selected areas of the sheet.

According to a second aspect of the present invention there is provided a display device of the kind specified which includes a matrix applied to at least one of the first and second surfaces which comprises a series of lines extending between opposed edges of the sheet and in which the spacings between the lines and/or the thicknesses of the lines are so chosen as to obtain a desired intensity of illumination at selected areas of the sheet.

A matrix of markings is preferably applied to each of the first and second surfaces so as to cover at least a major proportion of each surface.

The sheet of light-transmitting material is preferably of generally rectangular form and there is preferably a first series of lines extending between two of the opposed edges of the sheet and a second series of lines extending between the other two opposed edges of the sheet.

The two series of lines intersect to define a plurality of polygons, which may be squares or rectangles, but are preferably hexagons, i.e. the matrix is in the form of a honeycomb pattern.

Thus, according to a further aspect of the present invention there is provided a display device of the kind specified which includes a matrix applied to at least one of the first and second surfaces and in which the matrix is of honeycomb form.

The light-transmitting sheet may be of an acrylic material, but other transparent materials, such as glass, may be employed. One other possible material is PETG, i.e. glycol-modified polyethylene terephthalate.

The preferred method of applying the markings is by inkjet printing, as described in co-pending Application No. 0211343.9, to which reference should be made. This produces a substantial reduction in respect of the quality control problems that have previously been encountered when making display devices of the kind specified.

The markings may, however, be applied by means of a stencil. Whichever means of applying the markings is chosen, a computer-controlled system may be used for choosing the thicknesses of the lines forming the hexagons and/or the sizes of the hexagons.

Figure 1 of the drawings shows a hexagon pattern forming part of the surface of an illuminated sign,

Figure 2 of the drawings shows another hexagon pattern, and

Figure 3 of the drawings is a graph comparing the degree of illumination of an illuminated sign having markings as shown in Figure 1 with the degree of illumination of a known form of

illuminated sign as referred to in the introduction to this specification.

As will be seen from Figure 3, the degree of illumination obtained with the sign in accordance with the present invention is consistently superior to that obtained using a sign in accordance with European Patent Specification No. 0 549 679.

The markings can be applied to the light-transmitting sheet in any convenient way and may, for example, be in the form of a transfer which is bonded to the sheet.

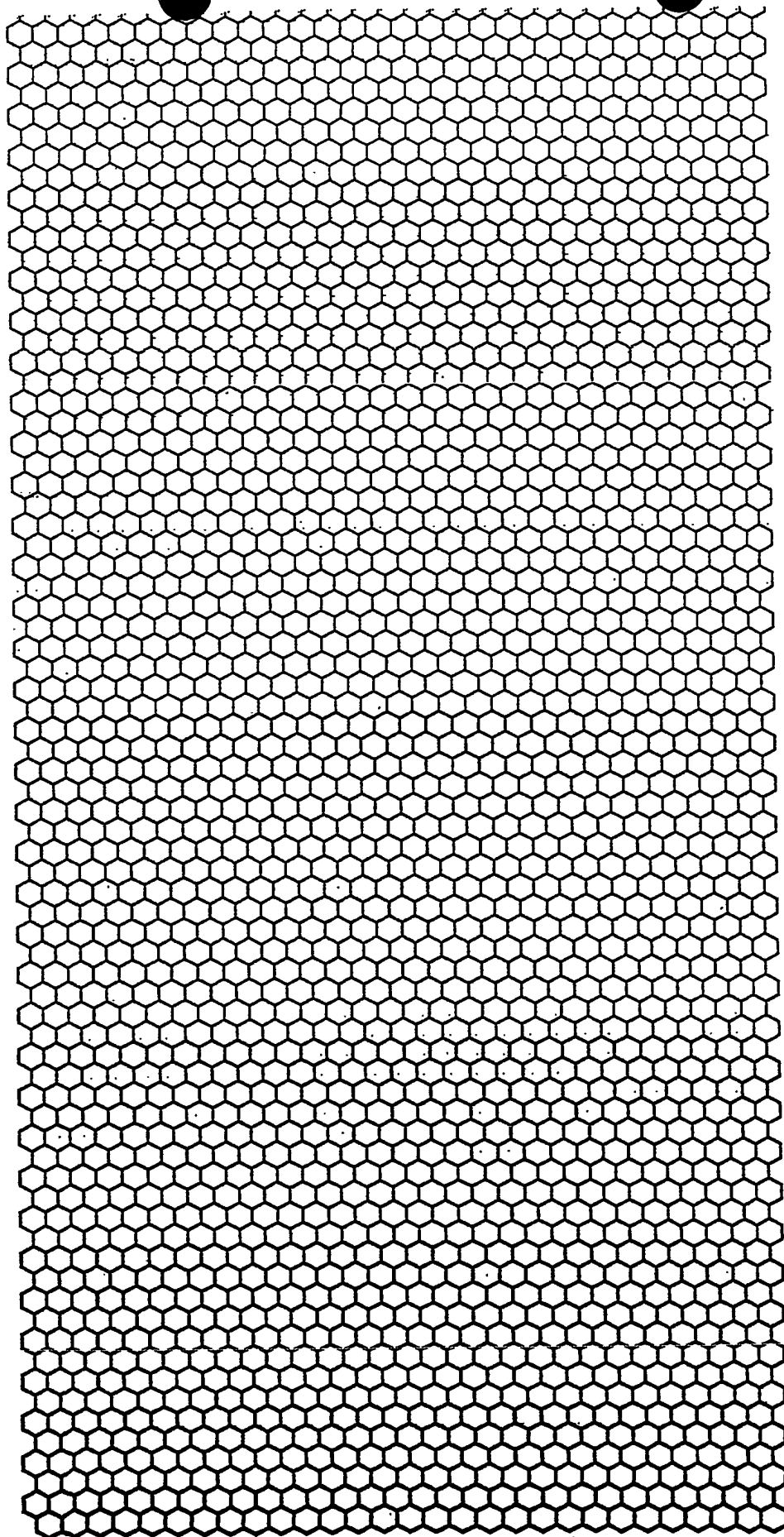


FIG
1

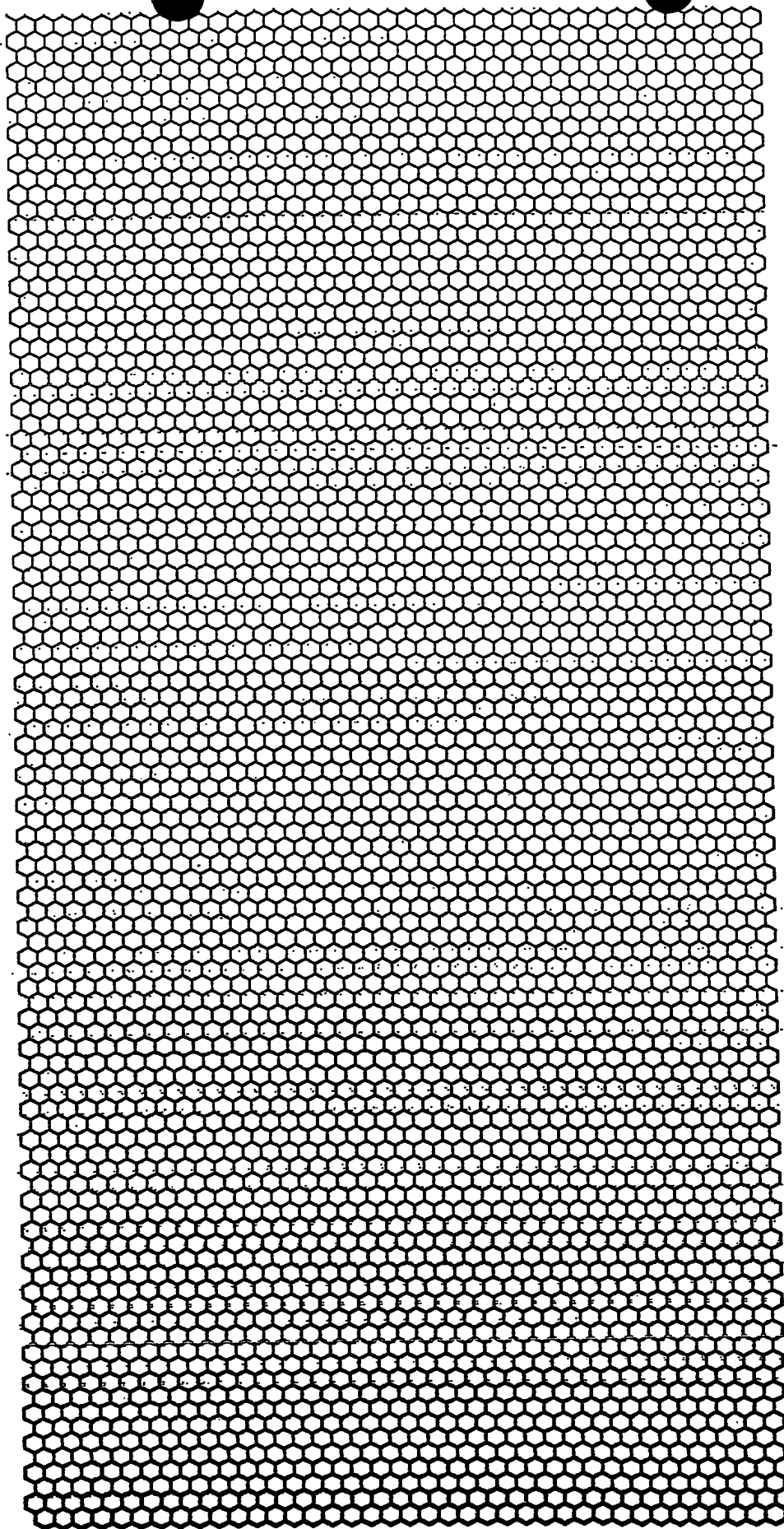


Fig
2

POLYlite 4 (10mm) vs Prismex (10mm)

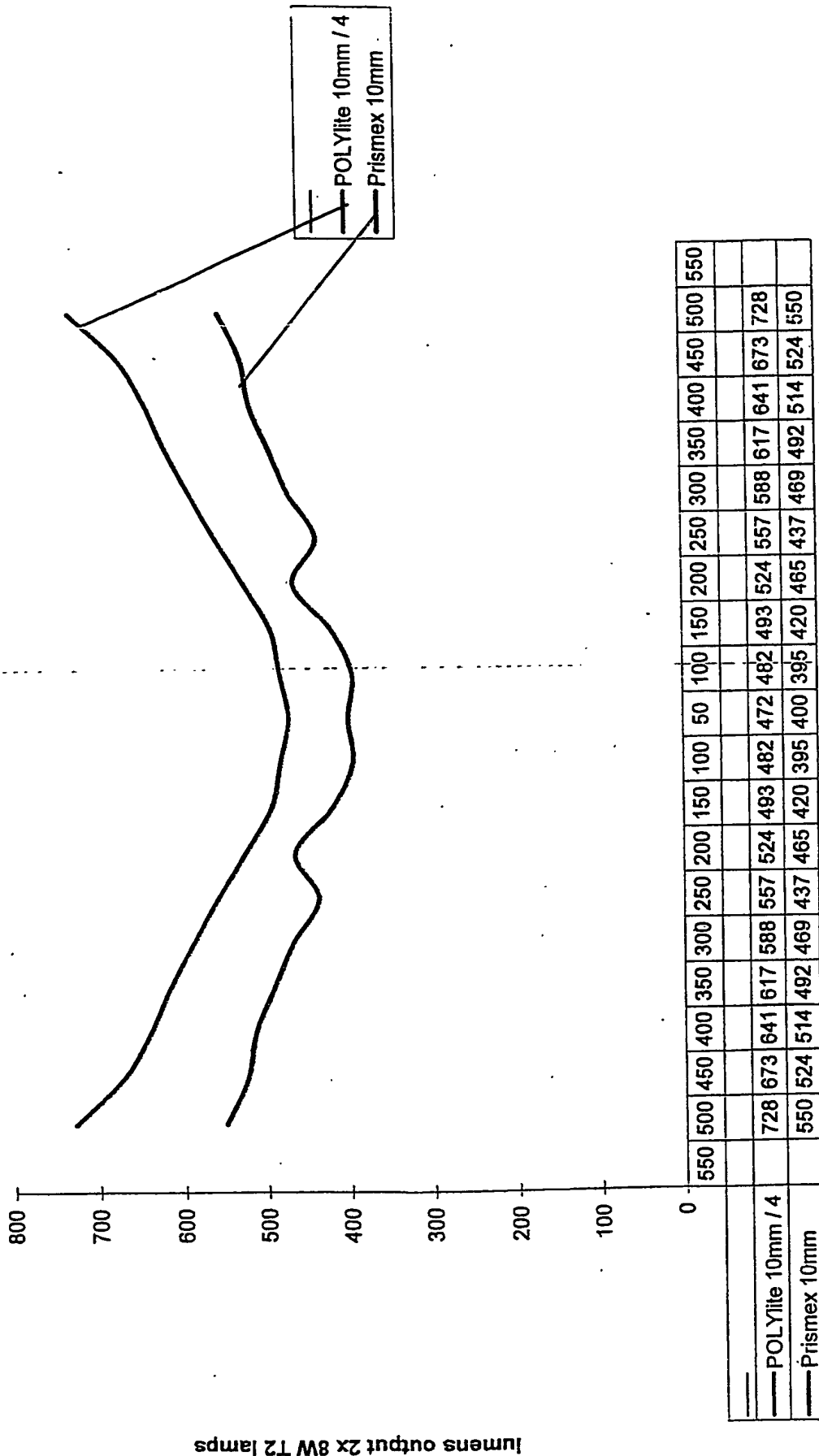


Figure 3

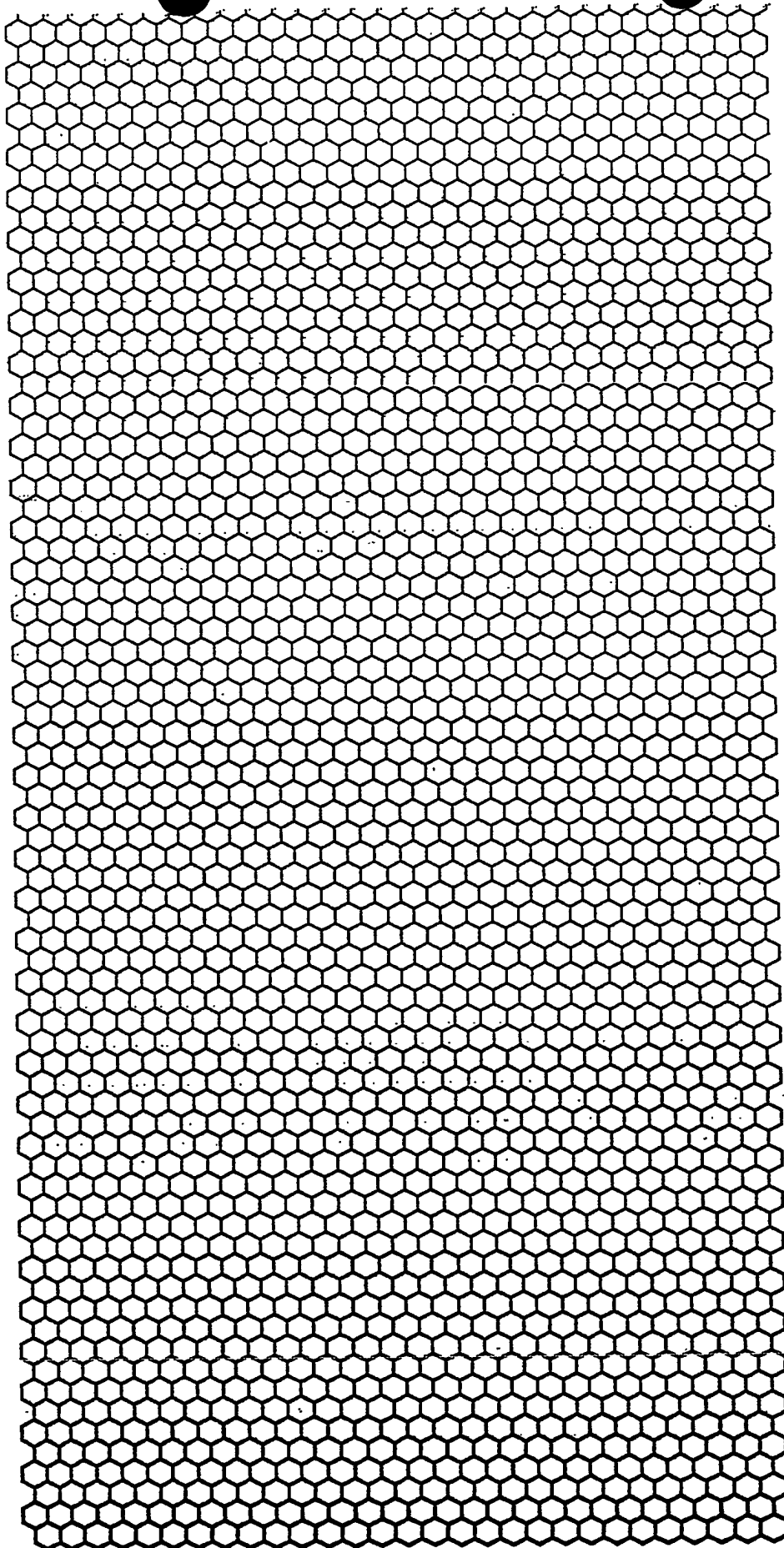


FIG
1

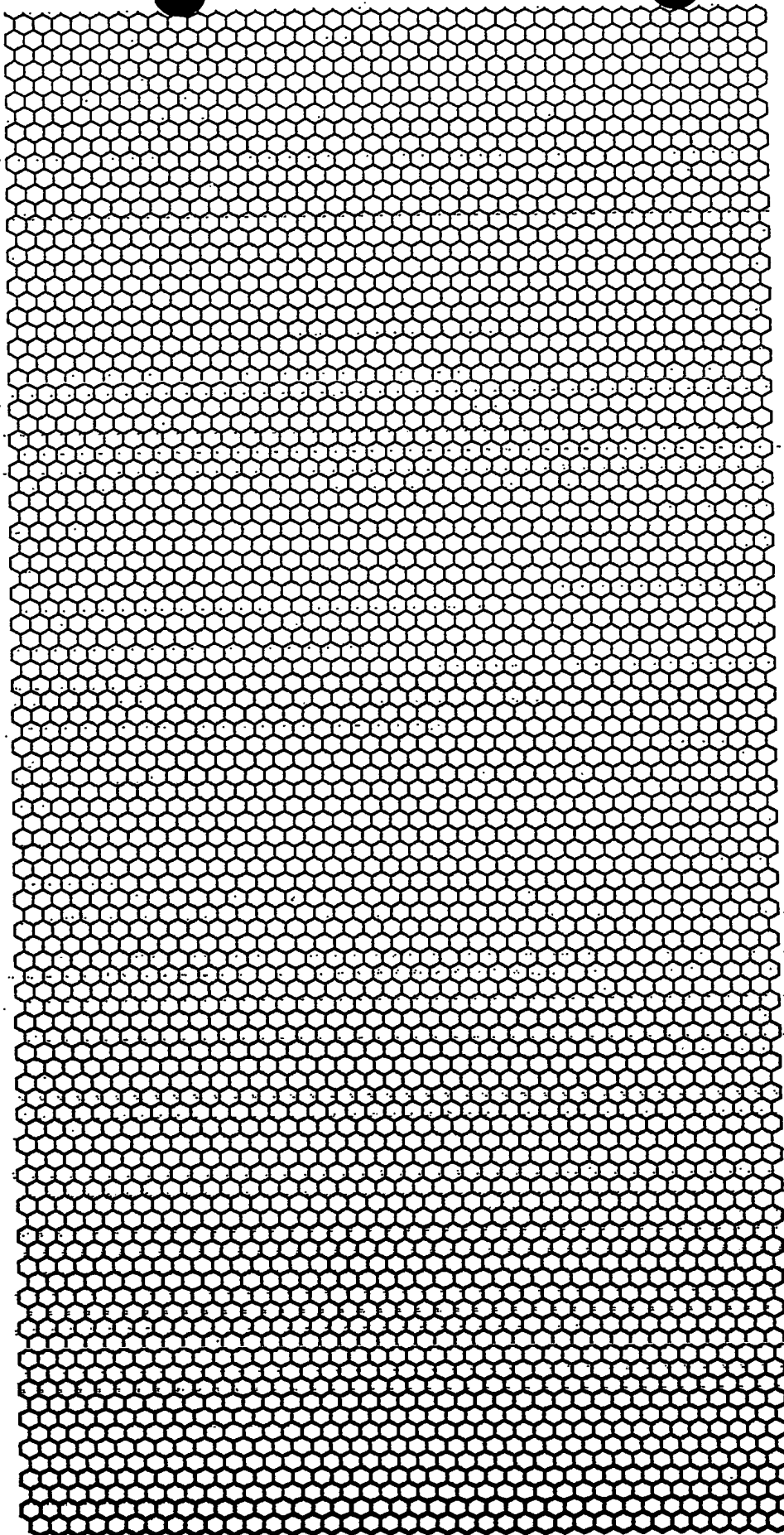


FIG
2

Chart1

POLYlite 4 (10mm) vs Prismex (10mm)

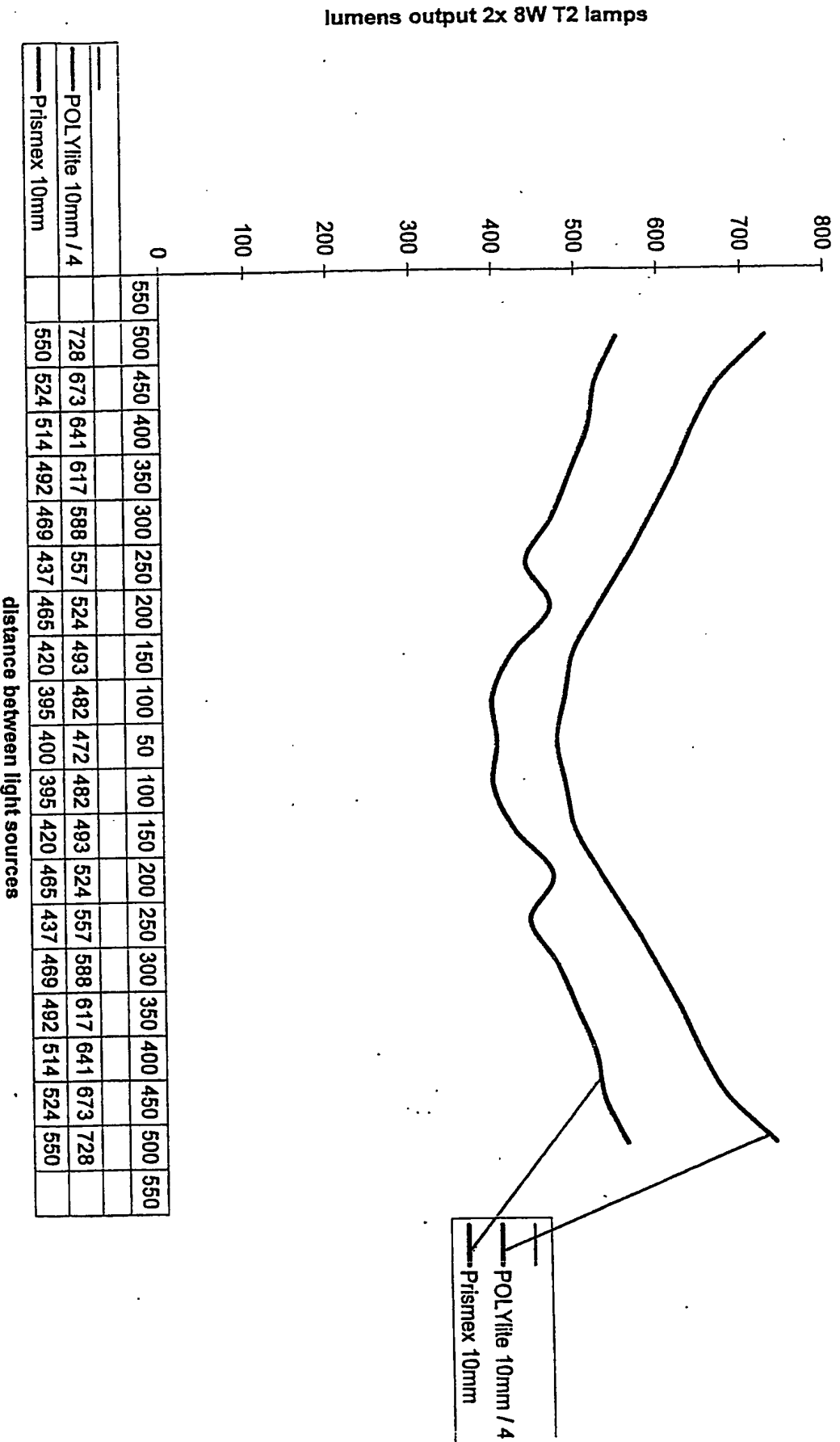


Figure 3